



Badger chemist : the newsletter of the University of Wisconsin-Madison Chemistry Department. No. 34 1990

University of Wisconsin--Madison. ; Dept. of Chemistry
Madison, Wisconsin: Dept. of Chemistry, University of Wisconsin,
1990

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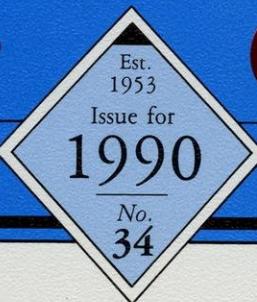
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Badger Chemist



THE NEWSLETTER OF
THE UNIVERSITY OF WISCONSIN-MADISON

CHEMISTRY DEPARTMENT

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1AGD 5500

MAR 30 1990

Aaron Ihde, PhD - Editor Emeritus

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FROM THE CHAIRMAN



PAST, PRESENT & FUTURE

THE DEPARTMENTAL HISTORY has demanded a considerable fraction of Aaron Ihde's creative efforts over more than a decade. As a result of his dedication and commitment, this important project has now reached completion. It seems appropriate that I dedicate this issue of the BC, at least informally, to Aaron. In giving us this book, he has made a valuable gift to past, present and future generations of Badger Chemists.

In this book, the origins of the department in the nineteenth century, and the shaping of the department to its current stature and perspective in the first two thirds of the twentieth century, are recorded and analyzed. A decision not to extend detailed coverage past 1967 came about for three reasons. First, it reflects a concern that Aaron and I shared several years ago, about the ability to develop an accurate perspective of relatively modern events. Second, the forces that would direct future activities of the department, notably the US government funding of research and the demographics of population leading to rapid growth of the university were already in place by this time. Finally, 1967 also presented a significant milestone for the department in that the second part of the new building was completed. The department was soon to occupy its new quarters and the faculty was reunited, having been split for 6 years between the old building on University Avenue and the new "Chemistry Research Building."

The completion of this history has given me pause to reflect, however. For many of us at least, the sixties are not the end but are instead the start of an association with the UW and its Chemistry Department. I was a student here in the mid-50's (BS '58) and began my faculty appointment as an assistant professor in 1963. So I, and I am sure many others, will wonder, what next? Will there be a history for 1968 to 1990? And what about the developments to come, since future decades promise new and interesting challenges and problems?

All of which brings me to a second point of this discourse. In the future, someone will likely undertake writing volume 2 of the department history. That person will need help, and it certainly seems appropriate for the *Badger Chemist* to provide at least some important background information for this project.

In BC #33, I said that I wanted to make some changes in this newsletter. Several cosmetic changes brought a new appearance. Less apparent, but more important in the long run will be changes in the content. Foremost is my goal to provide a lot of information in this newsletter and to personalize the issue. With respect to the former, please take special notice of the feature article on plans for an addition to the building, and the recounting of the year's activities. For the latter, I have included recollections by an alumnus (the late James Hall, who provided the "Remember When" article). There is also an article from Chuck Curtiss, a faculty colleague who recently reached emeritus status.

It is appropriate to close with an expression of gratitude from the department for many contributions of financial support. More than ever before, colleges and universities need the support of alumni.

Paul Treichel

* * * IN SEARCH of a Building Addition

THE CHEMISTRY Department currently occupies the Daniels-Mathews Chemistry Building. A master plan for this building provided for a five stage construction project. The six story first stage (originally the Chemistry Research Building and later named the Mathews building) was occupied in 1962. Soon thereafter, under Chairman Farrington Daniels' leadership, the second, third, and fourth stages (the Daniels building) were built. Chemistry vacated the University Avenue building that it had occupied for many years and was together in one building in early 1968.

Midway through the '70s, the department tentatively considered plans for further construction. Lacking what was believed to be sufficient justification, we asked the Psychology Department (housed directly across Charter Street) to join with us in a plan to build a chemistry-psychology addition to the Daniels-Mathews building on the corner of Charter and Johnson. That plan never got off the ground, however. In late 1981, we concluded that the needs for more space were now sufficient to move ahead on our own and at that time the New Building Committee was formed. Chaired by Dan Cornwell, this committee was responsible for developing the case and for preparing the proposals to be considered by the university. In 1982, the first proposal was completed and on its way through review and evaluation. Thus began a quest which has now spanned most of the eighties and will continue at least into the early nineties.

THE NEW building proposal has been greatly strengthened over the decade since our needs for space continued to grow. The size of the proposed construction grew modestly as the project evolved and the costs grew tremendously, in part because cost estimates were refined, but mostly because of increases over a decade in estimated costs for construction. The original proposal (10 pages, double-spaced) called for 48,700 ASF of new space (Assignable

Square Feet, basically measuring the area actually used and omitting halls, entrances, service facilities and the like) at a cost of \$11.0 M. Along with new construction, the plan included major remodeling to upgrade existing space. There was no estimated cost for the remodeling in the first proposal. Later figures put remodeling costs at several million. Cost estimates for construction and remodeling in 1991-93 are almost double initial projections (please see Table 1, page 4.)

Projects of this magnitude on the UW campus seldom occur quickly. Generally, meritorious projects slowly rise through a series of committees at the campus, university, finally state level; they may fall at any point, but if successful, they eventually reach the point where the crucial decision is made for state funding.

CONSIDERATION of a major building proposal is an elaborate process spanning almost two years. Our 1987 proposal requesting funding in the 1989-91 state biennial budget may be used as an illustration. In the fall of 1987 Chemistry submitted a preliminary version of our proposal (basically a redraft of the proposal from the previous biennium) to the College of Letters and Sciences where it was ranked first among about 10 proposals. After a small amount of editing, the 1/88 version of the proposal (19 single spaced pages), was forwarded to the Campus Planning Committee. I made a formal presentation to the CPC with slides and drawings in January, 1988; several months later, our proposal was ranked 5th by this group and recommended for planning funds in 1989-91 and construction in the following biennium. The UW system and the Board of Regents next reviewed and approved the proposal, merging it with proposals from other state campuses.

Further rewriting transformed the



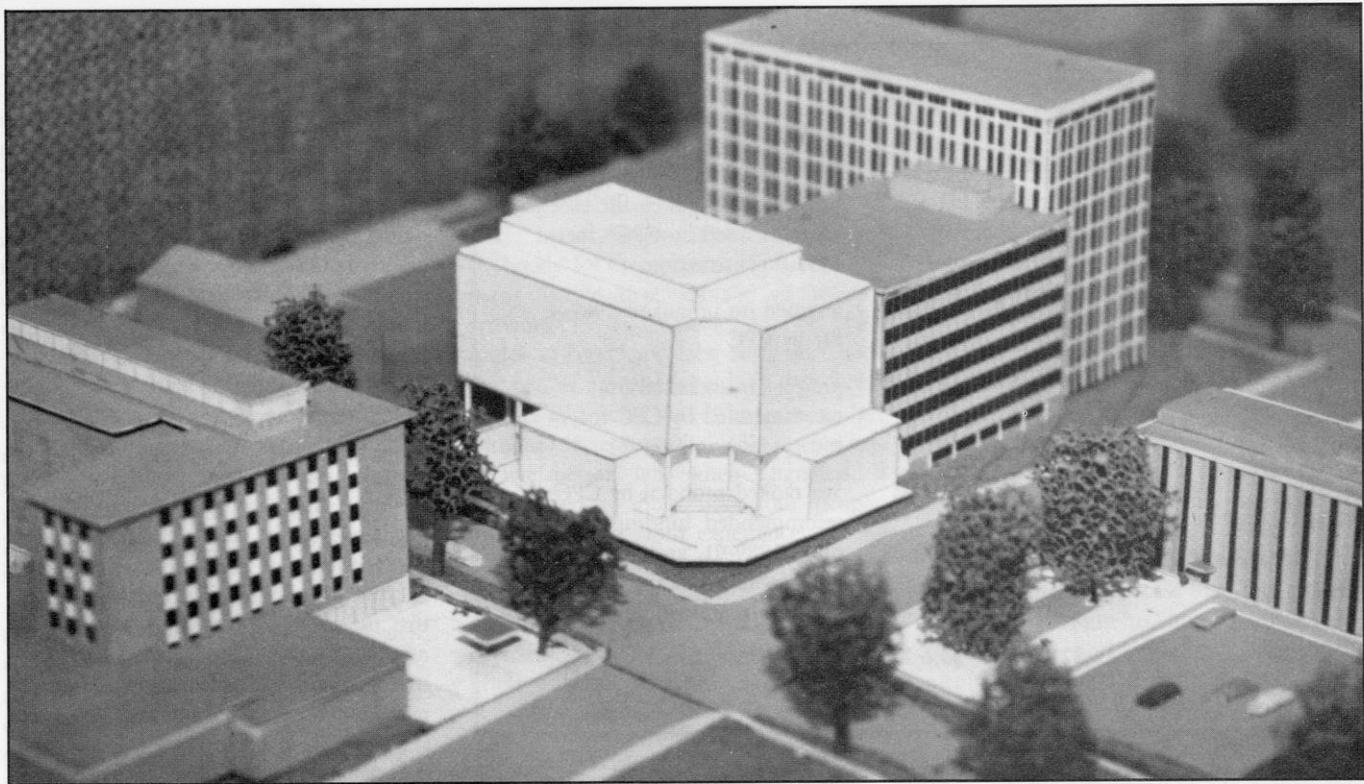
document to a rather formal (as well as formidable) 58 page document; the background, description, and supporting documentation was supplemented by UW Planning and Construction's plans and sketches. In March 1989, this went to a subcommittee of the State Building Committee. They reviewed our proposal (now the university's proposal) but recommended that it not be supported. UW-Madison

Chancellor Shalala then presented our case to the full State Building Committee, a meeting at which Dan Cornwell and I were present to provide information if necessary (it didn't happen) but the die was cast so to speak, and the subcommittee's recommendation was sustained.

WHAT WINS or loses at this level? Two factors hurt us in this instance. First, the UW Madison campus was putting its highest priorities in other budgetary areas; library funding, the supplies and equipment budget, and the Chancellor's Madison Plan had higher priority for additional funds for this campus. Indicative of this was the fact that UW-Madison forwarded a proposed building list that was only about one-half of the dollar size of previous years. Second, we had local competition from a relative newcomer to the building list, a proposal for a Biotechnology addition to Genetics. Biotech did not have their own building, and moreover it appeared likely that this program would gather between 50 and 100% of the funding needed from the federal government and other sources. In the end, Biotech was awarded planning funds in the 1989-91 biennium and received promises for construction fund approval on or before the 1991-3 biennium if the external funds materialized.

In fall 1989, we started the process again. With an updated 26 page document in hand, I made my second presentation to the Campus Planning Committee in November, 1989; at this writing the CPC is deliberating whether whether we outrank major renovation of the red gym into a student services building and a new Engineering building. Our proposal gets a little more elaborate at each step. For the CPC presentation

(please turn to page 4)



THIS MODEL shows UW Planning and Construction's preliminary plan for an addition to the Chemistry Building. Although an addition to our building has not yet been approved, the department is approaching the upcoming deliberations with guarded optimism that this, at last, will be the year. If all goes well, 1995 occupancy is envisioned.

In this plan, the building addition will have six above ground floors, a basement and a sub-basement. The basement and first floor will house teaching activities, connecting conveniently with the teaching labs, classrooms, and offices in the rest of the building. Research space on the first floor of the Mathews wing will be converted to teaching space; SERAPHIM and ICE will expand in these areas and the Chemistry Tutorial Program will also locate here. The entrance on Johnson and Charter is designed with student access in mind. Floors two through six will be research areas, and tentative plans are to move biochemically oriented research groups into much of this space. A notable feature in this plan is the overhang of these floors above the service driveway leading to the loading dock of the building. The two houses sited in this space, one the current residence of the Chemistry Tutorial Program, will be razed. Some parking space will be lost, but hopefully a few spaces can be retained.

In addition to the conversion of space vacated by several research groups to other uses, the major remodeling proposed arises from an early decision to incorporate the upgrading of existing facilities into this project. This upgrading will increase the number of hoods in synthetic laboratories to one per person and provide further instrument and office space.

The Weisshaar laboratory, constructed earlier from three TCI offices on the eighth floor of the Daniels Building.

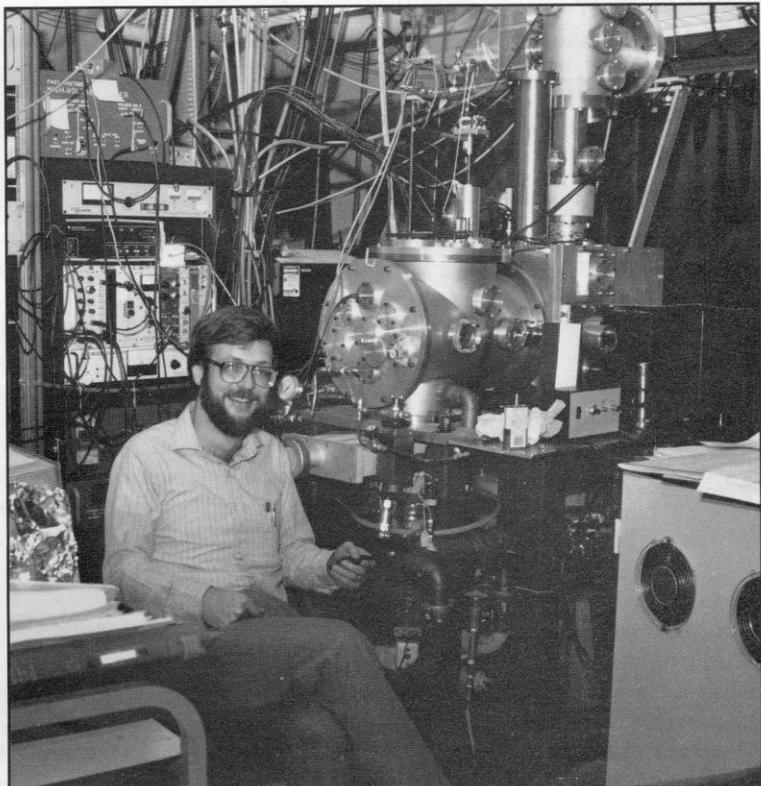


TABLE 1: Project History

Proposal dated	Request New ASF	Costs		Outcome
	New Constr.	Remodel.		
5 / 82	48,700	\$11.0 M	x	project on unranked list recommended by CPC* for 1987-9 construction
10 / 83	48,700	\$11.0 M	x	retained on unranked 1987-9 list by CPC
11 / 85	49,080	\$14.3 M	\$3.6 M	project on unranked list recommended by CPC for construction in 1989-91
1 / 88	49,080	\$16.2 M	\$4.7 M	5th ranked proposal by CPC, recommended funding for planning, 1989-91, and construction, 1991-3; State Building Commission rejected recommendation
11 / 89	53,000	\$21.6 M	\$8.6 M	under consideration by CPC

*CPC: the UW Madison Campus Planning Committee

TABLE 2: Statistics on the Research Program

	1968	1988
faculty	40	41
graduate students (Chemistry)	314	269
graduate students (other)	0	20
postdoctoral students	37	45
academic staff members	3	27
classified staff	39	43
total personnel	433	445
total credit hours taught	18,821	19,041

TABLE 3: Departmental Instrumentation

	1968	1988
Equipment in Department		
computers	none	approx. 200
lasers	none	20
Instrument Center Equip.	\$ 0.475M	\$4.4 M
Cap. Equip. purchased, previous 5 years	\$ 0.675	\$8.8 M

(continued from page 2)

we had the model (shown on page 3) for proposed construction on the Charter-Johnson site.

We are optimistic about our chances. Our case has improved with the addition of the highly visible and education oriented SERAPHIM program (see feature, page 9) and by the notable growth of the department's stature as judged by such things as the recent PYI awards to faculty. We have the commitment from the Chancellor to

push our case. And, looking back in past records, we note that a biennium with low state funding for building is most often followed by one with greater than average funding. So we proceed, with renewed optimism. Hopefully, BC #35 will be able to report the success of our efforts.

The Case for a Building Addition

Our case for this project starts with numbers. A State of Wisconsin Space Management Agency defines space needs for a program

through a calculation that makes a square foot assignment for each person in a building based on his or her activity and type of appointment (faculty, research assistant, teaching assistant, undergraduate doing research). There is an additional calculation for classrooms and for instructional laboratories. This final calculation projects a need of 249,000 ASF for the department's research program. Our current building contains 179,000 ASF, presenting a need of about 58,000 ASF. While this calculation is obviously approximate, the large shortfall (approx. 25% too little space) is meaningful and persuasive to the state's decision makers.

However, all is not well at this point because we immediately confront the fact that the number of people in the department (faculty and staff, graduate students, and undergraduate students) has remained nearly constant over 20 years. If we have operated for 20 years with the same space, perhaps the calculation is inexact. To counter this argument, we have to talk about our program (vide infra). Preliminarily, however, let us look at representative numbers from our proposal (see Table 2 at left).

THE DECREASE in the number of Chemistry graduate students occurred in the early '70s, and from that time the numbers have been relatively constant. This decrease has been partially offset by the addition of Materials Science and Biochemistry students, a fairly recent phenomenon reflecting changing perspectives in the department. It is helpful to our case is that this number is growing. Faculty numbers have remained constant but there has been a major growth in the number of Academic Staff support personnel (the undergraduate laboratory directors, and instrument center, computer, and electronics shop personnel) that occurred in the late 60's and early 70's. There is a relationship between this growth and a major involvement in instrumentation in both the teaching and research programs, of benefit to our further arguments.

To support our case based on numbers, we can also observe that these figures do not include 10 to 20 additional people that are part of the new (1989) SERAPHIM operation. We can also make note of the small positive growth in numbers of personnel, and a projected upward trend in these numbers.

We can best rebut arguments based on the small change in numbers of personnel in the department in two ways. The large increase in the use of instrumentation, and the greatly enhanced awareness and restrictions related to safety in the laboratory have resulted in major changes over 20 years in the way that research is done.

DATA ON instrumentation are most striking and are seen when the data in Table 3 (page 4) are combined with those in Table 2. Supplementing these figures, in 1989, the Chemistry Instrument Center added two new NMR instruments valued at \$1.1 M.

These data provide us with strong arguments that modern chemical research requires more space than it did 20 years ago. The Chemistry Instrument Center occupied about 20% of the second floor of the Mathews wing; now it is close to 80%. Jim Weisshaar's research lab on the eighth floor (usable by about 6 students) was constructed from three offices previously used by the Theoretical Chemistry Institute to house up to 9 students. Because of the presence of lasers and high voltage equipment in the lab, Weisshaar students using this equipment need further space in an adjacent room for offices.

We have constructed a modern laser lab facility in the sub-basement, from a storage area. Most research groups have individual equipment such as small spectrometers and PCs for graphics and word processing as well as for more sophisticated experiments. To have a reasonable lifetime, electronic equipment cannot be placed in labs.

NOWHERE IS the space need so apparent as in the general chemistry teaching area. Lab modernization funds from the state (see BC #33) have provided the opportunity to construct a modern computer lab for general chemistry. We converted one half of a regular lab into a small computer lab on the first floor which now houses a portion of new computer and video disk equipment. With careful scheduling, the new computer lab facility was used successfully in fall, 1989 by 250 students in John Moore's lecture section of Chemistry 103. It is our hope to extend use of this facility to all 2000 students in Chemistry 103, but how this can

be managed is not yet obvious.

The safety arguments are dominated by the need for hoods in the synthetic labs. As originally constructed, labs in our current building have one small 6 ft. hood for two persons or two 8 ft. hoods for five persons. Current standards dictate that virtually all research activities in a synthetic lab be done under a hood; so, labs with one hood per person are essential. It is impossible to add additional hoods to existing labs without decreasing the lab's occupancy. A five person lab, when upgraded, is best suited to hold only four people. (We know this from experience. Several labs in the building were upgraded without decreasing the number of work stations; the result is a dangerously overcrowded lab.) Remodeling to upgrade our labs to a reasonable standard

will further compound space needs.

Before concluding, it is appropriate to add that our case for this new addition is built on a strong foundation. The strengths of the department and research programs are recognized and respected in the university. In addition, the teaching program has always enjoyed a strong reputation, and instruction in chemistry is central both to chemical sciences on campus and important to many other disciplines. While our reputation is not an argument for new construction, *per se*, it is a strong factor in getting the university and the state to consider our case.

To us our case looks obvious. But, can we make our case for this project strongly enough to non-scientists, administrators and eventually the state legislators who appropriates funds?

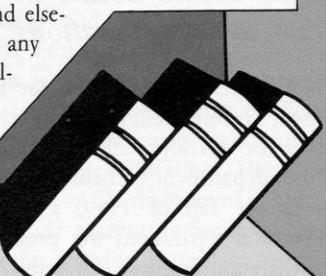
REQUEST FOR BOOKS



LONG WITH a diverse collection of furniture in the Chairman's office, I inherited an empty bookcase. It's actually quite a nice piece of furniture. The only trouble is, it has been empty for about three and a half years. Or at least mostly empty; among other things, I have stored the department's "Snootout" coffee mug collection there.

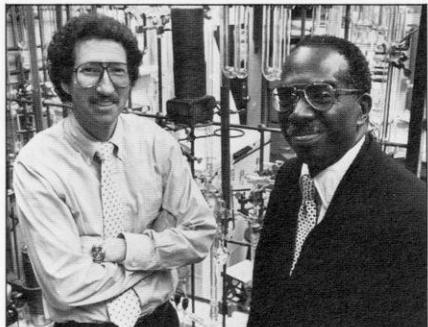
I would like to establish a collection of books by UW Chemistry Department authors, ultimately aiming to have a complete set on these shelves. Some very significant books have come out of this department. There are the Daniels, Mathews et al., Physical Chemistry texts, the Physical Chemistry lab book, and Harvey Sorum's text, lab manual, and problem books, all of which I used as a student. Then there is the Blaedel and Meloche analytical text, Aaron Ihde's "The Development of Modern Chemistry", Marion O'Leary's Organic Text, Shakhshir's freshman books and supplementary materials, and his three volumes of "Chemical Demonstrations". And some research classics, including "Molecular Theory of Gases and Liquids", and "Dynamics of Polymeric Liquids", coauthored by Chuck Curtiss. And probably some that I have missed.

I tried looking through my own shelves and elsewhere, but found only a few of these books. Do any of you readers have books by UW Chemistry faculty that you would be willing to donate to fill the open shelves? We would prefer clean copies in good condition. But before sending a book, it might be a good idea if you write first.





*UW-Oakwood College
Faculty Exchange Program*



Art Ellis

Emerson Cooper

ON THE UW-Madison campus, Chancellor Shalala instituted the Madison Plan, a multi-faceted program to address the minority education issue on many fronts. Included as part of the Madison Plan is a faculty exchange program between this university and predominantly minority colleges. An early participant in the faculty exchange program was Professor Art Ellis. He and Professor Emerson Cooper, from Oakwood College in Huntsville, Alabama, traded two one week teaching assignments during the spring semester of the 1988-9 academic year. Art comments that "the experience showed...that if people are willing to spend a little time there are a lot of payoffs, both for the individuals and the institutions involved."

*Special Topics Course in
Biochemical Separations*

IN CONJUNCTION with the Department's involvement in the biotechnology area is the development of a new course in the department, Chemistry 630.

In the fall of 1989, a course on biochemical separations was presented by the Analytical Sciences (formerly Analytical Chemistry) Division. The course was taught by Professor Lloyd Smith, and the laboratory experiments were developed and coordinated by Lloyd and Dr. Matt Sanders (PhD '83, Wirth); Matt is Lab Director for Analytical Sciences Division's instrumental courses. Topics included thin-

layer chromatography, ion exchange and affinity chromatography, gel filtration, gas chromatography, hplc, SDS polyacrylamide gel electrophoresis, isoelectric focusing, pulsed field gel electrophoresis, capillary electrophoresis, and DNA and protein sequencing. The second half of the semester was spent on an independent lab project of the students' choosing.

Instruments for the laboratory portion of the course were mainly borrowed from the analytical instrumentation lab; additionally, Lloyd donated time on his research group's equipment for the electrophoresis experiments. In the course, 25 students came from Departments of Chemistry, Chemical Engineering, Food Science, Oncology, and Medicine.

"Special topics" courses are offered frequently in the Chemistry Department. The "special topics" label provided an opportunity to teach a totally new course and the flexibility to set a different format for the class, as in this instance when a laboratory was deemed an essential feature. After one or more successful offerings, a special topics course is usually given its own number and description.

Materials Science

IN DESCRIBING the widening horizons of the Department, we should also take note of Chemistry's strong involvement with the Materials Science Program. Professor Jim Taylor has chaired this program for 3.5 years; other chemistry faculty involved include Rob Corn, Art Ellis, Don Gaines, Bob McMahon, Bill Pietro, Jim Tobin, Bob West, and Hyuk Yu. At this time, about a dozen students in the Materials Science area work with chemistry faculty members.

"Programs" like those in Materials Science and Biotechnology are typically set up to administer study by students in emerging, multidisciplinary areas. Students are admitted to a course of study by the Program which also estab-

lishes requirements and a curriculum of study. Programs can organize research funding for students and equipment. Unlike a department, school, or college, a Program cannot hire faculty except in conjunction with an academic department, nor can it grant promotions or tenure.

Biotechnology and Chemistry

LOYD SMITH and several faculty members from other departments (Biochemistry, Chemical Engineering, Bacteriology, and the School of Pharmacy) have started a new interdisciplinary graduate training program in Biotechnology. They wrote a successful proposal to NIH for a institutional training grant and received the largest such grant in the country. Fifteen training fellowships will be awarded to graduate students this year, with the steady state level eventually reaching 25 fellowships per year. John Luckey, in Lloyd's group, and Paul Savage, in Professor Sam Gellman's group, were among the first group of fellowship recipients.

Eight current chemistry faculty members have ties to biotechnology. In addition to Lloyd, who is also a member of the steering committee, and Sam Gellman, the list of faculty participants in the Biotechnology program includes Art Ellis, Laura Lerner, Tom Record, John Schrag, Bob West, and Hyuk Yu.

Visiting Professor Schantl



THE DEPARTMENT was pleased to welcome back Professor Joachim Schantl as Visiting Professor during the fall 1989 semester. Josh taught first semester organic chemistry and had previously been at Wisconsin from 1966-68 as a Fullbright Scholar and postdoctoral fellow with Howard Zimmerman; nostalgia was part of his decision to come with his family to Madison as a visiting faculty member.

Josh was born in Berlin to Austrian parents. His father is a chemist in the

Gmelin Institute, and he did his PhD with Bretschneider at Innsbruck, Austria. After postdoctoral study in Madison he returned to the University of Innsbruck as assistant professor; he now holds the rank of extraordinary professor and is serving, for a second time, as Director of the Institute for Chemistry and Pharmacy.

Freshman Seminars

THE MILWAUKEE-based Schoenleber Foundation pledged \$300,000 to the College of Letters and Sciences to support a program of freshman seminars that may be unique in the country. An idea of Dean E. David Cronon launched last year (1988-9), the seminar program is being taught to classes of 15 students by distinguished Emeritus Faculty in the College. Over the two year period, there have been 11 different classes. The popularity of the program among students is so high that the college hopes to be able to expand their offering in the future so that a larger number of students can participate. Chemistry Emeritus Professor Aaron Ihde taught one of these seminars in fall, 1989, choosing his area of specialization, History of Science, as a topic.

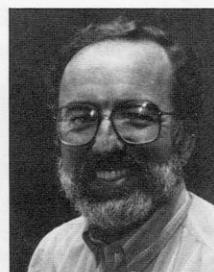
The Chemistry Department has established a series of enrichment seminars for students in General Chemistry classes. At the end of the fall semester, invitations to attend and participate are sent out to students ranking in the top 20% of the class in Chemistry 103. Attendance at the seminars provides honors credit in Chemistry 104 to these students if they request it. At these seminars, held one evening a week during the spring semester, faculty members in the department talk about their research programs. The seminar series was considered a success in spring 1989 by about 150 students who participated, and the program is being continued in 1990.

One of the goals of this program is to encourage students to consider majoring in chemistry. This reflects a growing concern that there will be a major shortage of scientists by the end of the next decade. These concerns are being voiced effectively at the national level by Professor Bassam Shakhashiri, who is currently on leave from the department to serve as Associate Director of Science and Engineering Education at NSF.

About our new Faculty . . .



Judith Burstyn



John W. Moore

JUDITH has joined the faculty as Assistant Professor of bioinorganic chemistry. Her doctoral work was with Joan Valentine at UCLA where she studied metalloporphyrin models for the cytochrome P450 monooxygenases. After receiving her PhD. in 1986, Judith spent a year as a post-doctoral associate in the laboratory of Arthur Cho, UCLA School of Medicine. There she studied structure-function relationships in the oxidation of amines by cytochrome P450. In 1987 she joined Stephen Lippard's laboratories at MIT as an American Cancer Society fellow. She investigated the role of the anti-tumor drug Cisplatin in the disruption of cellular replication processes in an effort to understand how the drug functions.

Judith's first research project at the UW is on the role of nitric oxide as a biological trigger. The regulation of the signal transducer guanylate cyclase by nitric oxide is important in the regulation of blood pressure and therefore this work is of potential significance in the understanding and control of hypertension. Other interests of her research group include the development of inorganic reagents useful for molecular biology and trace element metabolism.

Judith was born in Boston, MA and was raised in Pittsburgh, PA and New Jersey. She received her BA in Chemistry from Cornell University.

DR. JOHN MOORE received the A.B. magna cum laude from Franklin and Marshall College and the Ph.D. from Northwestern University, concentrating in physical inorganic chemistry. During 1964-65 he held an NSF postdoctoral fellowship at the University of Copenhagen. He taught at Indiana University-Bloomington (1965-71) and Eastern Michigan University (1971-1989) before

joining the faculty of UW-Madison in 1989 as Professor of Chemistry and Director of the Institute for Chemical Education. In 1985 he served for a month as a Chinese University Development Project Visiting Faculty Member at Wuhan University, People's Republic of China and in 1987 was appointed as Associate Professor by the French Ministry of Education.

John has won several awards for his teaching, including the Catalyst Award of the Chemical Manufacturers Association (1982) and the Michigan Association of Governing Boards' Distinguished Faculty Member Award (1982), and in 1986 he was a Silver Medalist in the CASE Professor of the Year competition. From 1979 to 1984 he served on the Michigan Environmental Review Board, which advised the Michigan Governor on environmental quality issues. He has more than 20 years' experience using computers in chemical education, has presented more than 150 lectures at conferences and colloquia, taught or organized more than 40 workshops for teachers, and is the author of more than 90 publications in inorganic chemistry, chemical education, computer applications in chemistry, and environmental chemistry. He was editor of the Computer Series feature of the *Journal of Chemical Education* from its inception in 1978 until 1989, and is current editor of the *Journal of Chemical Education: Software*. He is the director of the Project SERAPHIM, an NSF project for innovative chemical education using computers and other technology, and of the Institute for Chemical Education (ICE).

John is a member of the American Chemical Society's Committee on Education, for which he chairs Subcommittee A on pre-college education. He is very active in the ACS division of Chemical Education: at present as Secretary-Councilor of the Division as well as Secretary of the Board of Publications of the *Journal of Chemical Education*; he has served also as Chair of the Computer Committee, the Committee on Personnel and Nominations, and the Program Committee. He is a member of Phi Beta Kappa, Sigma Xi, AAAS, ACS, NSTA, and Phi Kappa Phi.



Awards, Awards

HERE WAS much excitement in the department in early spring, 1989, when three faculty members, Bob McMahon, Ned Sibert, and Lloyd Smith, were named as recipients of NSF sponsored Presidential Young Investigator Awards. This was impressive, since there were about 20 PYIs in chemistry in 1989, with about 10% of the nominees receiving these prestigious awards. The awards provide a research grant which is increased if the PYI obtains matching industrial support; with matching funds, the PYI award provides significant funding for a new faculty member's research program.

Steve Burke and Jim Skinner (newly hired, see Overview, p. 14) were PYI awardees in 1984, the first year of this program.

In spring, 1989, Steve Nelsen was named to a University Houses Professorship, a UW Graduate School award which provides research support over a five year period. The University Houses award allows the awardee to select a name for the professorship which can then be retained for the rest of his or her career. Steve chose for his appointment the Paul Doughty Bartlett Professor of Chemistry; by naming the chair after his major professor, he followed the tradition set by previous recipients in the department.

Daniel H. Rich gave the Edgar Fahs Smith lectures of the Philadelphia Section of the ACS. He received the SATO Memorial Award by the Japanese Pharmaceutical Society in April, 1989 and in conjunction with this award gave a series of lectures in Nagoya, Kyoto, and Tokyo. He also was awarded the du Vigneaux Award sponsored by BAchem at the 1990 Gordon Conference on Chemistry and Biology of Peptides.

Bob West received the Wacker Company Prize in Silicone Chemistry. This is the first time this award has been given to someone who is not a citizen of West Germany.

Howard Zimmerman was selected to receive the Hilddale Award, given annually by the UW Graduate School to one faculty member in the Physical Sciences Division in recognition of a career of distinguished contributions to the UW in teaching and research. This is the fourth year that the Hilddale awards have been

given; an earlier recipient was R. Byron Bird (PhD '50, Hirschfelder), Professor of Chemical Engineering.

Other Faculty News

THE 50th anniversary of the first total synthesis of the steroid estrogenic hormone equilenin occurred during 1989. The first publication of this work is found in *J. Am. Chem. Soc.*, 61, 974 (1939) authored by Professor Werner Bachmann, postdoctoral fellow Wayne Cole, and doctoral candidate Alfred E. Wilds. A milestone in organic synthesis, the achievement was notable for the thoroughness of the experimental work with high yields in carefully optimized procedures. (Notice was provided by Dr. Reynold Holmen, who as a graduate student at Michigan had Al Wilds as his TA in Quantitative Analysis. Emeritus Professor Al Wilds is in good health and visits the Department frequently.)

Phil Certain has "retired" from administration (he had served as Associate Vice Chancellor and also for a period of time as interim Vice Chancellor); he is now back full time in the Department. In June, he spent three weeks at the Technion in Israel, in a collaborative research project with a former postdoctoral colleague Professor, Nimrod Moiseyev. Phil organized a conference entitled "The Freshman Year in Science: Old Problems, New Perspectives for Research Universities", co-sponsored by the Alliance for Undergraduate Education and the NSF, held April 6 and 7, 1990 at the University of Michigan.

Fleming Crim was elected Fellow of the American Physical Society during fall, 1989. He presented a Welch Foundation lecture, Oct. 1989 at Texas and participated in the Royal Society of Chemistry Symposium in England, February, 1990.

Chuck Curtiss retired at the end of the 1988-9 academic year; a dinner in his honor was held at the Blackhawk Country Club

When you are being kicked from the rear it means you are in front.

—Message from fortune cookie recently taped to door of Chemistry Department chairman's office.

with about 75 people in attendance. As Emeritus Professor, he is continuing research at his previous pace.

Chuck Casey lectured at Bayreuth, Germany and in Honolulu at the PACIFICHEM meeting. He is Chairman-Elect of the ACS Inorganic Division.

Both of Larry Dahl's parents died during 1989, following a period of deteriorating health (they were in their 90's); this necessitated Larry and June taking a number of trips to Louisville. Larry still travels widely; he presented seminars at the following universities: Southern California (Loker Symposium on Electron Deficient Clusters), U. of Pittsburgh, South Carolina (the 1989 H. Willard Davis Lecture), Georgia, Delaware (the Richard Heck Retirement Symposium), Texas A and M (7th annual IUCCP Symposium on Metal-Metal Bonds and Clusters in Chemistry and Physics), Minnesota-Duluth (ACS Midwest regional meeting) and Drew University. During the trip to Delaware, Larry was treated to a 60th birthday party with former friends and coworkers at the home of Joe Calabrese (PhD '71, Dahl) in Wilmington. Larry also gave the 1989 Paolo Chini Memorial Lecture at the National Societa Chemica Italiana meeting at Perugia, Italy.

Art Ellis received a Guggenheim Fellowship for the fall semester of 1989 to study chemical sensors. He spent three weeks in Japan, presenting seminars and learning about sensor research. Art was elected Chairman of the Solid-State Subdivision of the Inorganic Division of the ACS.

Sam Gellman attended the Gordon Research Conference on Proteins and an NSF Workshop on Organic Synthesis and Natural Products during the summer of 1989. He received an American Cancer Society Junior Faculty Research Award, 1989-91.

John Harriman has served as Associate Chairman in the Department for the past 1.5 years.

Steve Nelsen spent an enjoyable second month on his von Humboldt award in Germany in 1989 with hosts Paul Rademacher in Essen and Hermann Mockel (UW Visiting Prof., '85) in Berlin. During his Europe visit, he gave lectures in twelve universities in West Germany and Switzerland. Another highlight was the Gordon Research Conference on Free Radicals in July, 1989 which was also attended by several ex-group (continued on page 20)

PROJECT SERAPHIM

* * *

Project SERAPHIM began operation in 1982 as a clearinghouse for instructional microcomputer information in chemistry. It has rapidly grown into a unique organization that: carries out research; develops new materials; collects and distributes materials; trains teachers; and maintains large databases of available software, hardware use in education, computer users, and software reviewers. With a mailing list of more than 13,000, SERAPHIM directly involves a great many persons from around the world who are interested in new ways of teaching and learning chemistry—from pre-high school through graduate level.



Betty Moore, Program Manager

WHEN THE MOVING VAN bringing John and Betty Moore pulled up to the department's loading dock this past summer, the movers unloaded an unusual assortment. There were a great number of microcomputers of many kinds, each with its own name; there were boxes and more boxes containing floppy disks; there were cartons of "masters", both paper and disk; there were still more boxes of printed materials; there were stacks of videodiscs; there were boxes of empty boxes; there were back issues of newsletters; there were stacks of unopened mail from around the world.

What is Project SERAPHIM and how does this "stuff" add up to it? It is really four things: a clearinghouse; a workshop program; a fellowship program; and a peer-reviewed publication on disk, *Journal of Chemical Education: Software*. Each is described below:

The Clearinghouse

THE CLEARINGHOUSE is the original part of SERAPHIM, begun in January 1982 with funding from NSF. (Coincidentally, this was during the time that Moores spent a year on leave here at Wisconsin.) The Clearinghouse represents a collection of more than 700 different microcomputer programs to teach chemistry, arranged on about 240 different floppy disks. These programs run on IBM PC's, on Apple II's, on Macintoshes, and on Commodores. In addition to the soft-

ware itself, there is written information about computers and technology and how to use these effectively in a classroom or lab. All items distributed are listed in the SERAPHIM Catalog. It is estimated that 36,000 Catalogs have been distributed from SERAPHIM headquarters and that more than 100,000 disks of software have been distributed from the headquarters and two dozen regional distribution centers in both the U.S. and abroad. More than 13,000 teachers of chemistry from around the world are currently on the mailing list, with roughly half at the secondary level and half at the college/university level. Those on the mailing list receive Project SERAPHIM News, usually published four times per year.

The materials distributed by the Clearinghouse are contributed by teachers of chemistry, at all levels and from everywhere in the world. The only thing alike about them is that they have produced something that they would like others to be able to use; so they send their program to SERAPHIM.

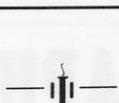
Workshop Program

SINCE 1984 there has been a network of primarily secondary school teachers throughout the U.S. who organize and present workshops for fellow teachers in their region. There are about 35 teachers who present several different workshops, including introductory computer use, the

use of computers in laboratories, building inexpensive interfacing devices. Additional workshops, as well as symposia, are also presented at chemical education conferences and meetings. Since 1984 Workshop Leaders have communicated via their own nationwide computer conference network, CHYNET.

Fellowships: Research and Development

OVER 40 chemistry teachers, from high schools, small colleges, two-year colleges, and universities, have been SERAPHIM Fellows during a summer or an academic year. Most have received financial support, most have been on a sabbatical; but some have come without funding, just for the chance to work intensively with a group of people with similar interests—teaching chemistry and the application of technology to teaching, where the technology can do something uniquely well. Each Fellow works on a project, and projects can range from inexpensive interfacing in the laboratory, to the application of artificial intelligence to teaching inorganic reactivity, to developing a simulation of a sophisticated chemical instrument where the computer becomes the instrument, to setting standards for published computer programs, to producing a visual database of chemical reactions on videodisc. Fellows may work alone or as part of a team, *(continued on page 20)*



Alexander (Sandy) Amell (PhD '50, Daniels) retired from the U. of New Hampshire at the end of the 1987-8 academic year. Among many university activities during his long career, he served as Chairman of the Chemistry Department and Director of the MS in Teaching program. He received several teaching awards and was given the UNH Distinguished Professor award at the 1988 commencement exercises.

...

Roland A. Aubey (BS '49) received the TAPPI Process and Product Quality Division Award. He was manager of the Product Development Group for Nekoosa Paper, Inc. until retirement in July, 1989.

...

Herbert Beall (BS '61) was promoted to full professor at Worcester Polytechnic Institute.

...

Joann M. Eisenhart (PhD, '85, Ellis) wrote to inform us that she had been part of a group at Rohm and Haas working on new recruiting strategies. She was in Madison with the R & H recruiting team in fall 1989. She has also been teaching a pre-chemistry course in the evenings at Delaware Valley College.

...

Robert P. Frankenthal (PhD '56, Shain), currently at ATT, received the H. H. Uhlig Award in Corrosion Science in 1989.

...

Patrick J. Fortune (PhD '74, Certain) is Senior Vice President of the Packaging Corporation in Chicago.

...

Patrick K. Gallagher (BS '53, MS '54, PhD '60, King) is now Dow Professor for the Chemistry of Materials at Ohio State U., after 30 years at AT&T Bell Labs.

...

William S. Ginnell (PhD '49, Willard) retired from McDonald Douglas Astronautics in 1984 and joined the Getty Conservation Institute as Head of Materials Science.



Along with gifts came many letters with information and notes of encouragement. We have abstracted many of your letters to provide the news items listed in This 'n That. Please keep sending us news; we will use it for the next edition, Badger Chemist No. 35.

Michael C. Kallay (MS '72) corrected information in BC #33. He is currently at the U. of Rochester Medical School and was recently promoted to Assoc. Professor; he is teaching and doing research on gas exchange physiology.

...

Mary Jo Kopecky, (MS '70) lives in Madison and is currently Chief of the Air Quality Planning Section for the Wis. Dept. of Natural Resources. She writes that their most exciting activity is in a four year study, joint with three other states, on the chemistry of ozone formation and the meteorology of ozone transport for the Lake Michigan airshed.

...

Ron Kratochvil, now chairman of the U. of Alberta's Chemistry Department, sent best wishes to former faculty colleagues here.

...

Allen G. Gray (PhD '40, Holt) received the National Materials Advancement Award in 1989. Dr. Gray retired from ASM International in 1983 and has served since then as Adjunct Professor of Materials Science and Engineering at Vanderbilt U.

...

A. G. Giumanini (Postdoc '65-'68, Zimmerman) is full professor of organic chemistry at the new U. of Udine in the upper northeastern tip of Italy; his research interests are in new reactions, reaction mechanisms, and new syntheses and products.

...

Robert L. Harris (PhD '51, Ritter) retired after 32 years with Allied-Signal Corp and 5 years with the US EPA, Region II.

...

Bill Jensen (BS '70, PhD '82 Larsen) is the editor of a similar newsletter. He writes that the U. of Cincinnati has three other faculty with Wisconsin ties: **John Belletire** (Postdoc, '78-'80, Trost), **Estel Sprague** (Postdoc '73-'74, Willard), and **John Thayer** (PhD '84, West).

Gerald R. Miller (BS '58) Professor of Chemistry at the U. of Maryland at College Park, says that the state has finally recognized the flagship status of his campus which will get a real (after inflation) 10% increase in the state budget.

...

David Moore (PhD '80, Wright) is Section Leader for Photochemistry/Spectroscopy at Los Alamos National Laboratory.

...

The department welcomed **Karen** and **Dick Mullineaux** (PhD '51, McElvain) during their July, 1989 visit to Madison. Dick talked with the McElvain Seminar Committee and joined several faculty for lunch at Paisans.

...

Steve Nelsen provided some news of former group members. **Mary Van Atten** (MS '89) took a position at DuPont Medical Products Division. **Si Blackstone** (PhD '85) came through Madison last fall, shopping for an x-ray diffractometer. **Ed Clennan** (PhD '77) spent spring semester on sabbatical at UCLA. **Glen Cunkle** (PhD '84) has moved to Ciba-Geigy in White Plains, NY. **Tim Friga**

(PhD '88) is a postdoc at MIT. Peter Gannet (PhD '82) is Asst. Professor of Pharmacy at the U. of West Virginia. Tom Ippoliti (PhD '87) is an Asst. Professor at St. Thomas College, and Dan Steffek (PhD '82) is teaching at Upper Iowa U. Chris Hollinsed (PhD '79) is leader of the process development group at Polaroid. Michiko Iwamura (postdoc '69) is head of the new biochemistry department at Toho (Japan) U. Carl Kessel (PhD '79) spent the summer on sabbatical from 3M doing surface science at the U. of Illinois. Tom Kolb (BS '89) started his career at Kimberly Clark and came back to the UW Chemistry Department as a recruiter during fall, 1989.

...

Robert N. Feinstein (BS '37, PhD '40 ► in Physiological Chem, Bradley) sent us an unusual inquiry last summer. He wondered whether we could send him the original drawing of a small sketch depicting two oysters found on page 11 of BC #33. This request was all the more intriguing because at first, we didn't even remember the drawing which had been added by our designers during the final production stage.

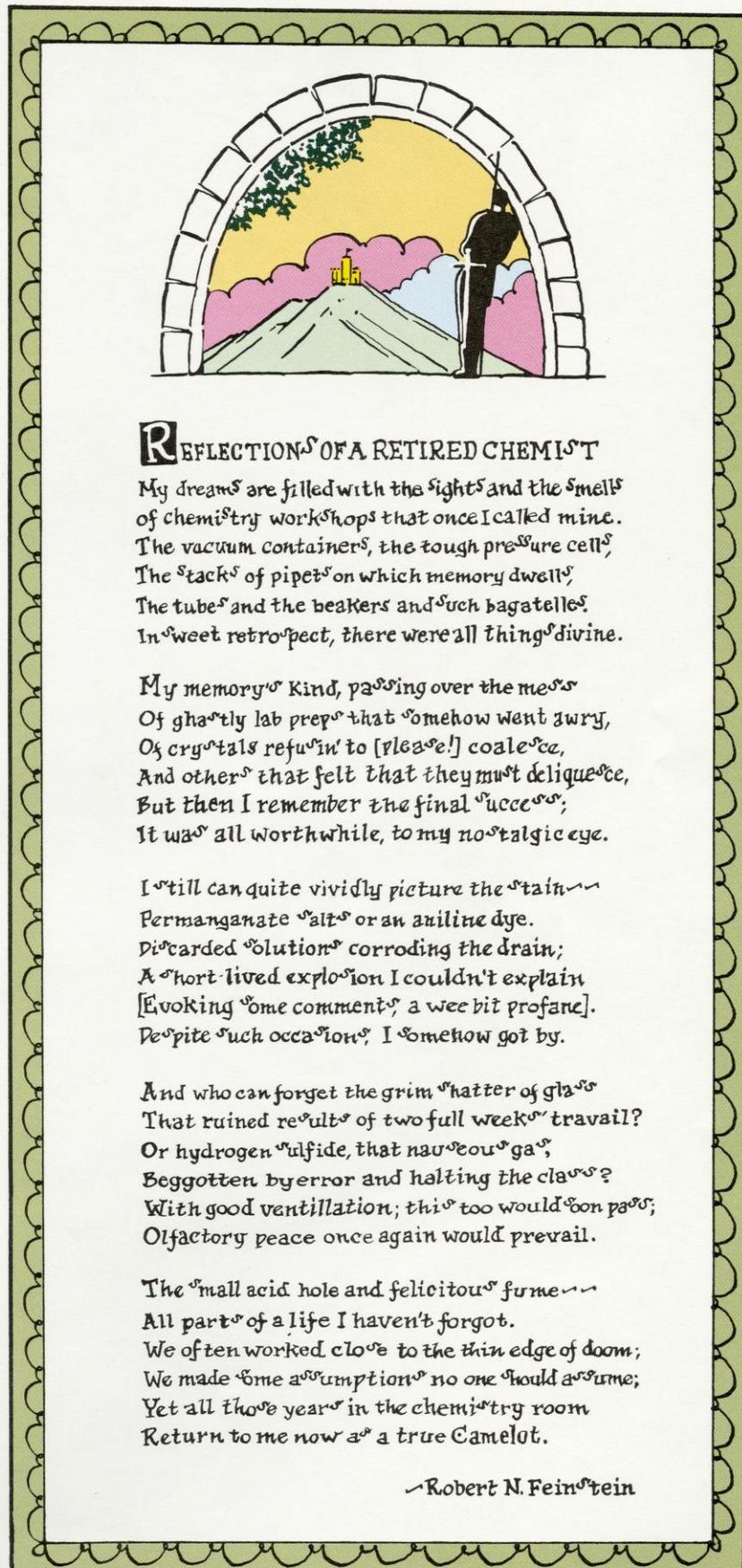
We checked and yes, the picture was in our files so we sent it off. We also took a little time to look more closely at "Son of an Oyster", the small book of poems that Dr. Feinstein had sent earlier. It immediately occurred to us that this was something unique for BC. So we asked Dr. Feinstein's permission to reprint one of his poems, preferably one involving chemists or chemistry. He sent us a copy of his first book, "Oysters in Love" (we now have the complete set of his works!) and permission to use any of his poems. We selected "Reflections of a Retired Chemist", reprinted at right.

Most of the poems in the books are on subjects other than chemistry. But a scientific twist to the subject matter is usually evident and rhythm, rhyming, and whimsical style are the norm. They are enjoyable reading.

"Reflections of a Retired Chemist" is one of a collection of poems in Robert N. Feinstein's "Oysters in Love," published by Stronghold Press, Bismarck, ND, 1984. It is reprinted by permission of the author, to whom inquiries may be addressed at 4624 Highland Avenue, Downers Grove, IL 60515.

...

Russell W. Peterson (BS '38, PhD '42, Walton; LLD, '84) retired from the Presidency of the National Audubon Society four years ago; he continues to be active as an officer of six international conservation organizations.





Memorial Union Terrace



THE VERVIEW

University News

CHANGES in three major administrative positions were notable during the 1988-89 academic year. L & S Dean David Cronon and Graduate School Dean Robert Bock decided to step down after many years of service in their respective administrative posts and Acting Vice Chancellor Bernard Cohen announced he would also not continue beyond the end of the year. Search Committees for each position were constituted and asked to produce a list of up to five acceptable candidates from which Chancellor Shalala would make the final choice. Names of candidates were not made public, a longstanding tradition in such searches here (and one that is increasingly coming under fire), and all committee deliberations were in closed session. The secrecy resulted in far ranging speculations among the university faculty and in the media on potential candidates. Eventually, the choices were announced: Professor David Ward, (Geography) was named Vice Chancellor; Professor Donald Crawford (Philosophy) became L & S Dean; and Engineering Professor and Associate Dean of the College of Engineering, John Wiley, was named as the new Graduate School Dean.

THE STATE of Wisconsin's biennial budget was a major news item during much of 1989 until approval in mid-fall. Not to minimize the importance of other parts of the budget, but our attention was focused on the university's portion.

State funding has generally not kept pace with increased enrollments and inflation for a decade. The library has been particularly hard hit with periodicals being cancelled and many new acquisitions being put off indefinitely. The new state budget did provide major help for the library with several million dollars in additional funding but little extra help in other areas.

One of the governor's proposals in the 1989-91 budget called for both "merit" and "catch up" pay in the

university salary package. Data showed UW faculty salaries to be about 10% below the median of peer institutions. Catch up was not very popular in the state; a previous exercise in the mid-eighties featured infighting among different campuses in the UW system and had produced some ill will in the state. Nonetheless, a 7.2% catch up raise was approved and added to a two year 8.0% merit raise. The merit/catch up issue was resolved in late November.

The merit portion was retroactive to the beginning of the fiscal year while the catch up portion is to be distributed in several stages over two years, the general policy of the state seeming to be to hold off as long as possible.

Although faculty salaries are now known, the state had yet to come to terms with most state employee unions including the TAA (Teaching Assistant Association). The official bargaining unit for TAs, the TAA has been negotiating with the state Department of Employee Relations since last summer.

The TA stipend issue has been quite unsettling for the department. Almost all entering graduate students in chemistry are given TA positions. As with faculty and academic staff salaries, TA salaries are well below national averages. In a highly competitive national market, the salary differential is perceived to be enough to hinder our ability to attract graduate students. A consequence of TA unionization is that the TAA negotiates with the State and not with the University. It has been frustrating to chemistry faculty, who have no influence on the labor-management negotiation.

A recommendation to the Regents to abolish the ROTC program was the business of a faculty meeting at the Stock Pavilion on December 4. At issue was discrimination in the military services based on sexual preference. With about one-fourth of the faculty in attendance, the motion passed by a vote of 386-248, and the outcome was widely reported in the national media. With strongly polarized opinions on both sides, the

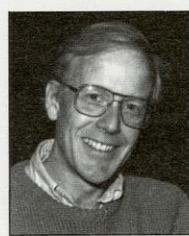
university seemed quite uncomfortable with this situation. Despite the faculty's recommendation, the Regents voted in February to keep the ROTC program at the UW.

This was the first meeting of the full faculty since 1970; most faculty business is handled via the Faculty Senate. According to university policies, such a meeting can be called if requested by a sufficient number of faculty.

Department News

CHUCK CURTISS retired in June, 1989 and Dick Fenske retired in August. Professor Marion O'Leary and Dr. Betsy Kean (Director of the Chemistry Tutorial Program) moved to the U. of Nebraska, he to the Chairmanship of the Biochemistry Department, she to an Assistant Professor position in Science Education. Assistant Professor Jim Tobin was not promoted to tenure. After a lengthy debate and on a split vote, the department passed a recommendation in favor of tenure. In accord with procedures, the Physical Sciences Division Executive Committee reviewed the case; their recommendation convinced L & S Dean Cronon to rule against promotion. Jim has accepted a position at Lawrence Livermore Laboratory.

John Moore joined the faculty as a tenured full professor of chemistry in August, 1989. Judith Burstyn started as assistant professor in January, 1990. Professor James Skinner of Columbia University has accepted a position as full professor and will assume the Hirschfelder Chair in summer, 1990. On leave from Columbia, he will be here during much of the spring semester.



Dan Rich



Charles Sih

Late in 1989, Professors Dan Rich and Charles Sih (both in the School of Pharmacy) accepted joint faculty positions in the department. Their addition provides further strength and breadth to the organic research program. These appoint-

ments are similar to Tom Record's joint appointment with the Biochemistry Department. They are zero percent time appointments (no regular teaching responsibilities in chemistry and no L & S funding) and convey membership on the Chemistry Executive Committee. Professors Rich and Sih can also supervise chemistry students. They have full access to departmental facilities, and can participate in departmental activities to the extent they choose. Both Dan and Charlie are regular attendees at the Organic Division lunch on Thursdays, now held at the University Club rather than Paisans since the group has grown to 15 people.

Dan Rich is a Cornell PhD in organic chemistry ('68, du Vigneaud); before coming to Wisconsin in 1970, he also held a postdoctoral appointment at Stanford with former Wisconsin faculty member William Johnson. His research focuses on design and synthesis of biologically active natural products derived from peptides. Many of his target molecules are protease inhibitors and others bind to well characterized receptor molecules. He is a member of numerous national committees, advisory and editorial boards. Charlie Sih, who began his faculty career at Wisconsin in 1960, is a UW PhD in Bacteriology ('58, Knight). His research involves developing biocatalytic methods for use in organic syntheses. He has received a number of awards in his career including the Volwiler award in Pharmaceutical Sciences (1977), the Roussel Prize in Steroid Chemistry (1984), and the American Pharmaceutical Society's Research Achievement Award in Natural Products Chemistry (1987).

SEVERAL major changes in academic staff have occurred over the past 1.5 years. There are a number of new personnel associated with Project SERAPHIM (see article, page 9). Bette Moore, John's wife, is Program Manager and Associate Editor of *J. Chem. Ed. Software*. Jon Holmes, Senior Editor in SERAPHIM, came to the UW from Eastern Michigan. Jim McCormack joined SERAPHIM as an Information Program Consultant.

In October, 1988, Dr. Douglas Powell assumed the position of Director of the x-ray crystallography labs, replacing Ken Haller who had left several months earlier to take a position at



Richard Fronko

Douglas Powell

Oneida Research Services in Whitesboro, NY. Doug, who received his PhD in Physical Chemistry from Iowa State in 1980, had previously been a staff crystallographer in the Geology and Geophysics Department at the University of Oklahoma. In March, 1989, Bruce Adams, Director of the NMR laboratories, moved into a staff scientist position with Laura Lerner's research group. As Bruce's replacement we hired a former student, Dr. Richard Fronko (PhD '84, Treichel). Dick had been an NMR technical assistant in the Chemistry Department in the early '80s and had gained further NMR experience at the Naval Research Laboratory in Washington, DC, as a NRC Fellow. His most recent position was as a postdoctoral fellow at the University of Michigan, where he worked on a bioinorganic chemistry project and added ESR to his area of expertise.

Gary Wesenberg (PhD '83, Record) announced his intention to join the Enzyme Institute to work with Hazel Holden and Biochemistry Professor Ivan Rayment on the determination of protein structure. In May, 1989, we hired Gary's replacement, Dr. Robert (Brad) Spencer. Previously, he had been at Nicolet, in Madison, where he was Manager of FTMS Software. Brad's background includes a PhD in Analytical Chemistry from Purdue U. in 1973.

In August, 1988, Charles Patterson became the departmental glassblower, succeeding Dennis Greunke who had

become disabled through an operation necessitated by a brain aneurysm. Charlie had previously worked in the Chemistry Department at Iowa State U.

Dr. Johnny Brown, Director of the Mass Spectrometry Laboratory, accepted a position at Oak Ridge National Laboratory. He resigned in May, 1989; we are currently seeking his replacement.

Professor Bassam Shakhshiri took a leave of absence from the Department in 1984 to assume the position of Associate Director of Science and Engineering Education at NSF. In March 1989, Bassam asked that his leave be continued through the 1989-90 academic year. In early May, the Department met and quite unexpectedly declined to recommend a further leave. Two months later, the Executive Committee met again, at Bassam's request, and reversed its earlier action. The recommendations were then approved by the Dean, Chancellor, and Board of Regents.

While the department was deliberating on the proposal, the Board of Regents was debating current policy which allowed leaves for long periods of time. With a threat that the Regents might propose a very restrictive leave policy, the UW modified its rules; requests for one year leaves will be automatically approved, two year leaves must be given special consideration and approval by the Chancellor, and leaves for longer periods of time will be approved only in highly unusual situations.

NEW BADGER CHEMISTS

BS

ALBERS, KEVIN E.
AVERKAMP, ROBERT W.
BONNIN, KATHLEEN R.
BORMETT, RICHARD W.
COMBS, ANDREW P.
CONSTANTINE, DINOS N.
DAIGLE, DENNIS J., JR.
DAVIES, RONALD R.
DREIFKE, LINDA K.
EHLINGER, BRUCE J.
FETTING, MIKE A.
FRALEY, MARK E.
GAVNEY, JAMES A., JR.
GOCKER, JOHN P.
GUNAWAN, HENDRI
HALEY, JEANEE T.
HASELOW, KENT D.
HENDERLEITER, JULIE A.
HILLER, ERIC M.
HREN, JOHN C.
HUTTNER, DONALD L.
HUYNH, MAI-LAN N.
JOHNSON, ALLEN L.
JOHNSON, STEVEN W.
JORDAN, MICHAEL A.
KARLSSON, BJORN H.
KOLB, THOMAS M.
KOLPITCKE, KEVIN P.
KREISMAN, DAVID B.
LEE, I-YING SANDY
MCINTIRE, THERESA M.
MINIX, BRIAN R.
NICHOLS-ZIEBARTH, ANN D.
PIERPONT, JOHN
POLIVKA, DELLA M.
RICHARDSON, PAUL L.
SCHASEL, BRIAN M.
SCHMITT, JAMES P.
SCHULTZ, LONNIE J.
SEK, DARRELD F.
STANEK, ERIK J.
TEMPRANO, JOHN E.
TOWNE, TIMOTHY B.
VAN WANENEN, GERRIT J., JR.
WACHOWSKI, ARTHUR C.
WALLOW, THOMAS I.
WERNER, DOUGLAS E.
WOIDA, KATHLEEN A.

MS

BINKLEY, JUDITH D. (CASEY)
CABAJ, JOHN E. (VEDEJS)
COTTING, JOHN E. (WEINHOLD)
ELWELL, ROBERT B. (BURKE)
FITZPATRICK, TIMOTHY (REICH)
HECHT, CHARLES (ZIMMERMAN)
JOHNSON, SIGMOND (WEST)
LIU, JIE (O'LEARY)
NEBO, JON F. (GAINES)
PLAGGE, FREDERICK A. (WHITLOCK)
SPOLAR, JOSEPH G. (EDIGER)
TAKEZAWA, YOSHIKAI (FENSKE)
VAN ATTEN, MARY K. (NELSEN)
WELHOUSE, GEREON J. (GOERING)

PHD

ADAMS, EDWARD J.
(VEDEJS) Investigations In Relative Stereocontrol
in Macrocycle Synthesis Using a Double Allylic
Sulfoxide Sulfenate [2.3] Sigmatropic Rearrangement

ALTIG, JEFF A.
(VAUGHAN) Dielectric Properties of Polyelectrolytes:
Aqueous Solutions of Linear Polyelectrolytes

ANCHELL, JAMES L.
(HARRIMAN) Position, Momentum and Phase-Space
Densities of Electronic and Dynamic Systems

ARNELLE, DERRICK
(O'LEARY) Phosphoenolpyruvate Carboxykinase
from *Chloris Gayana*: Purification and Isotope
Effect Studies

AUSTIN, MARY E.
(YU) Conformational Dynamics of a Polyelectrolyte
System: Poly (methacrylic acid) in Aqueous Media

BAILEY, TIMOTHY D.
(FARRAR) A Helium Microwave-Induced Plasma
Fourier Transform Spectrometer as a Novel Two-
Dimensional Detector for Gas Chromatography

BEALL, CHARLES E.
(TAYLOR) Synchrotron Radiation Photoelectron
Spectroscopy of Clean Rh(110) and with Saturated
Covales of CO, NO, O, S, SO₂, and NH₃

BRASLAU, REBECCA L.
(TROST) Palladium Catalyzed Cyclizations and
Reductions

BRZEZOWSKI, CHRISTINE M.
(TROST) Palladium(O) Catalyzed Macrocyclization
Reactions

CARLSON, ROGER J.
(WRIGHT) Quantitative Aspects of High Resolution
Fully Resonant, Four-Wave Mixing Spectroscopy
for the Analysis of Vibronic Coupling in Molecules

CASSEL, JONATHAN M.
(ZIMMERMAN) Photochemistry of a Sterically
Congested 1,4-Pentadiene

CIRILLO, KATHERINE M.
(WRIGHT) Defect Aggregation Kinetics in Calcium
Fluoride

CRANE, RICHARD A.
(TREICHEL) Synthesis of New Iron and Ruthenium
Complexes

CZECH, PAUL T.
(FENSKE) The Use of Semi-Empirical Molecular
Orbital Theory in the Calculation of NMR Shielding
Constants and The Role of Virtual Halogen d
Orbitals in the Stability and Reactivity of Transition
Metal Alkyl Halide Complexes

DES ENFANTS, ROBERT E.
(DAHL) Synthesis and Characterization of New
Rhodium/Nickel-Phosphorus and Nickel Antimony
Carbonyl Clusters

DIECKMANN, GUNTHER H.
(ELLIS) I. Gas-Solid Precipitation Reactions
in Lamellar Solids. II. Processing Effects
and Substrate Interactions in Thin Films
of Bi₂CaSr₂Cu₂O_{8-x}

DORHOUT, PETER K.
(ELLIS) Structural and Spectroscopic Studies of a Family
of Lamellar Host Solids: Hydrogen Actinyl
Phosphates and Arsenates

EDVENSON, GARY M.
(GAINES) Synthetic and Mechanistic Studies of
Alkyboranes and Icosahedral Carboranes

GILLETTE, GREGORY R.
(WEST) Novel Organosilicon Compounds from
the Reactions of Silylenes and Disilenes

GREEN, DANIEL P.
(REICH) Studies of Phenyllithium, Its Complexes
in Donor Solvents, and Its Role in Lithium-Metallocid
Exchange Reactions

HAEG, MARIETTA E.
(WHITLOCK) Synthesis and Study of Two Tri-
bridged Cyclophanes

HANSON, JEFFREY C.
(TOBIN) Temperature and Concentration Dependent
Surface Alloying and Segregation at the
Au/Cu(001) Interface

HOLCOMB, RYAN C.
(TROST) An Intramolecular Diels-Alder Approach
to the Carbocyclic Ring System of Forskolin

HYDE, PATRICK D.
(EDIGER) Time Resolved Optical Studies of Local
Dynamics in Polyisoprene and OTP

KANIS, DAVID R.
(FENSKO) Molecular Orbital and Natural Bond Orbital Studies of Transition Metal Polysulfur Compounds

KIM, YAESIL
(NELSEN) The Synthesis and Study of Acylated Bishydrazines and Their Radical Cations for Their Mixed Valence Behavior and the Study of Solvent Effects on Self-Electron-Transfer Rate Constants for a Sesquibicyclic Hydrazine

KNAPP, BRADLEY J.
(TOBIN) An Investigation of the Interfaces of Au, Ag and Cu on Ge(111)

LAMERS, PAUL H., JR.
(ZIMMERMAN) The Photochemistry of Extended Pi Systems

LEBLANC, BRIAN F.
(SHERIDAN) Direct Observation of Norbornadienone and Substituent Control of Matrix Dependent Hot Molecule Effects

LEE, JUNGSIK
(YU) Chain Diffusion Through Complex Media

LEE, LAURA K.
(GAINES) Investigations on the Friedel-Crafts Akylation Reactions of Pentaborane (9)

LIKAR, MICHAEL D.
(CRIM) vibrationally Mediated Photodissociation of t-Butyl Hydroperoxide and Hydrogen Peroxide

MARTH, CHARLES F.
(VEDEJS) Mechanism of the Wittig Reaction

MASON, JAMES D.
(REICH) 1. Investigation of Allenyl Lithium Species. 2. Chelation-Controlled Lithium/Metalloid Exchange

MAXKA, JIM B.
(WEST) The Effects of Structure on the Electronic Properties of Silicon-Silicon Bonds in Polysilanes

MCMILLAN, CHRISTOPHER S.
(ELLIS) Determination of Surface Hole-Captured Velocities and Depletion Widths in III-V Semiconductor-Derived Interfaces

MILLER (SANTIAGO), MARIA L.
(TROST) Stereochemical Aspects of the Trimethylenemethane-Palladium Catalyzed Cyclo-addition to Olefins

MUYSKENS, MARK A.
(CRIM) Rates and Mechanisms of Vibrational and Rotational Energy Transfer in Hydrogen Fluoride

NORTH, TERRY E.
(DAHL) Synthesis, Characterization, and Theoretical Investigations of Triangular Nickel Clusters

OAKS, FRANK L.
(ZIMMERMAN) The Photochemistry of Two Vinylcyclopropanes. An Investigation into the Scope of the Acyclic Bicycle Rearrangement

PAULSEN, MARK D.
(RECORD) Monte Carlo Simulations of the Interactions of DNA with Simple Electrolytes

PHAM, ERIC K.
(WEST) Platinum η^2 Disilene Complexes

RINGER, JAMES W.
(REICH) Preparation of Allyl Stannanes from Allyl Selenides: Synthesis and Mechanisms

ROONEY, MELODY A.
(O'LEARY) Short-Term Carbon Isotopic Fractionation in Plants

RUBLEIN, EDMUND K.
(TREICHEL) Studies of Organometallic Complexes and Reactive Thioalkylating Reagents

RUTTER, EDWARD JR.
(CASEY) Synthesis, Characterization and Reactivity of Rhenium-Platinum Dihydride Complexes

SANDERS, LAWRENCE J.
(WEISSHAAR) Chemistry of Electronic State-Selected Gas Phase Transition Metal Cations with Small Hydrocarbons

SCHWARTZ, CARL E.
(VEDEJS) Generation and Rearrangement of Cyclic α -Vinyl Sulfonium Ylides via Internal Sulfur Participation

SHEPHERD, BRIAN D.
(WEST) Structural and Cyclic Voltammetric Studies of Isolable Disilenes

SMITH, LAURA J.
(CASEY) Synthesis and Reactivity of ω -substituted Iron Alkyl Complexes

SOBERING, GEOFFREY S.
(FARRAR) Visible and Near Infra-Red Fourier Transform Atomic Emission Spectroscopy of An Atmospheric Pressure Helium Microwave Plasma

ST. CLAIR, JERRY D. III
(ZIMMERMAN) Electronics and Steric Control of Photochemical Migratory Aptitudes: The Photochemistry of 4-(1-Naphthyl)-4-(2-naphthyl)-2-Cyclohexenone

STOKICH, THEODORE M. JR.
(SCHRAG) The Influence of Polymer/Solvent Interactions on the Viscoelasticity and Oscillatory Flow Birefringence Properties of Poly-Styrene and Polyisoprene Solutions

STRAND, DIEDRE A.
(SCHRAG) The Effect of Polymer/Solvent Interactions on the Dynamic Viscoelastic and Oscillatory Flow Birefringence Properties of Polystyrene Solutions

TICICH, THOMAS M.
(WRIGHT) Overtone Vibration Initiated Pre-dissociation and vibrationally Mediated Photodissociation of Hydrogen Peroxide

TISSUE, BRIAN M.
(WRIGHT) Energy Transfer in Rare Earth Ion Clusters and Fluorescence from Earth Doped $\text{La}_{1.85}\text{Sr}_{0.15}\text{CuO}_4$ Superconductors

UNDERINER, GAIL E.
(WEST) New Allylic Anions: The Silanamidides

UNDERINER, TED L.
(GOERING) Cross Coupling Reactions of Allylic Dienyl Carboxylates with Organocopper Reagents

VOSEJPKA, PAUL C.
(CASEY) I. Reactions of Nucleophiles with Cationic Diiron Complexes. II. The Synthesis and Reactivity of Rhenium Alkylidene Complexes

WACHTER, ERIC A.
(FARRAR) The Development of Fourier-Transform Ion-Cyclotron Resonance Mass Spectroscopic Instrumentation for High-Resolution Measurement of Isotope Ratios

WALDOW, DEAN A.
(EDIGER) Local Segmental Dynamics of Polyisoprene and Polystyrene in Dilute Solution

WANG, LIXIAO
(YU) Transport Properties of Polyelectrolytes in Various Media

WHITEKER, GREGORY T.
(CASEY) Synthesis and Reactivity of Metal Complexes of Diphosphine Ligands with Large Natural Bite Angles

WITTENBERGER, STEVEN J.
(VEDEJS) Total Synthesis of Cytochalasans

ZIEBARTH, MICHAEL S.
(DAHL) Synthesis and Chemical-Physical Properties of Several Series of Organonitrene-Capped Cobalt and Iron-Cobalt Triangular Metal Clusters

ZUHOSKI, STEVEN P.
(ELLIS) Photoelectrochemistry of Strained-Layer Superlattice Electrodes

ZURAW, MICHAEL J.
(ZIMMERMAN) The Investigation of Organic Photochemical Rearrangements in Crystalline Solids: The Solid State Photochemistry of Cyclohexenones and Di- π -Methane System

The
Badger Chemist
and the
Department
of Chemistry
Extend
Congratulations
to our new
Graduates



C. Someswara Rao (Postdoc, '81-'82, Trost) is Vice President of Research and Development at Gufic Limited in Kabilpore, Navsari, INDIA, a company engaged in development of reliable and environmentally compatible manufacturing processes for drugs and drug intermediates.

...

Robert W. Rosenthal (PhD '49, Atkins) retired after 14 years at Florida International U. He and his wife recently sailed as Arts and Crafts Directors on the QE-2 world cruise.

...

Richard J. Saykally (PhD '77, Woods), Professor of Chemistry at U. of California-Berkeley was named recipient of the 1989 E. K. Plyler Prize in Molecular Spectroscopy by the American Physical Society and the Bomem-Michelson Prize for Infrared Spectroscopy.

...

John Scanlon (PhD '70 Williams) is Manager for Product Development at Campbell Soup Co.

...

Matthew F. Schlecht (BS '75) fled academia in the summer of 1988, becoming Section Research Chemist in DuPont's Agricultural Products Department, located in a brand new laboratory at the Stine-Haskell Research Center in Newark.

...

Alex Scheeline (PhD '78, Taylor) at the Chemistry Department at the U. of Illinois, wrote to mention various alumni: Paul Bohn (PhD '81, Taylor), also at Illinois, Kelsey Cook (PhD '78, Taylor) at the U. of Tennessee, and Gloria Pyrka (MS, '79), Asst. Professor at Kent State U.

John Schrag informs us that Mitch Dibbs (PhD '83) received Dow's Central Research Inventor of the Year award last year. The Schrag group at Dow is growing: Dee Strand (PhD '89) and Ted Stokich (PhD '88) recently joined Schrag students Craig Carriere (PhD '85), Dibbs, and former postdoc Dan Rothman.

...

Clifford O. Schwahn (BS '41) recollects doing his BS thesis with Schuette and writes of his retirement from Union Carbide in 1986. He is pursuing his hobby, photography, as staff photographer for

Joseph P. Stenson (PhD '70, Treichel) writes that 1989-90 marked his 20th year at Delaware Valley College in Doyles- town, PA. He developed an honors program there, after a recent sabbatical semester at Hampton-Sidney College.

...

John M. Swanson (PhD '40, Williams) liked the article on Jack Williams and noted that he believes that he was the only one of Williams' students to work on asphalts. He is now retired but is doing some teaching in a continuing education program at the U. of Delaware called "The Academy of Life-long Learning".

...



James Lester Hall (PhD '39, Williams), died December 1, 1989, at the age of 78 following a lengthy illness. Professor Hall was Emeritus Professor of Chemistry at West Virginia U, where he had at one time also been department chairman. He was a regular supporter of the *Badger Chemist*. (See "Recollections," page 22).

Michael Hovey (PhD '78, Zimmerman) died in Wilmington, DE; he had worked at DuPont.

Walter M. Kinz (PhD '30, Adkins) died in Santa Rosa, CA. He was 85 years old and a 64 year member of the ACS. The major part of his professional career, 43 years, was spent at Koppers Co.

William H. Webb (PhD '49, Meloche) died at age 77. He was Professor of Chemistry at the U. of Missouri where he had also been department chairman from 1964-77.

the Chicago Society of Coatings Technology; he is also consulting for the coatings industry.

...

Alan Shusterman (PhD '81, Casey) is on the chemistry faculty at Reed College.

...

After retiring, **A. W. Singer** (BA '32) moved to Oregon and taught part time at the U. of Oregon for seven years. He recalls doing research with MacElvain.

...

Ralph F. Turner (BS '39) has been researching Professor J. Howard Mathews work. He obtained the last of Matty's papers which are now in the Michigan State U. Archives. After nearly three years of informal negotiation, the FBI has agreed to display some of Matty's equipment in the FBI laboratories.

...

Kensal E. Van Holde (BS '49; PhD '52 Williams), Professor of Biophysics at the U. of Oregon since 1967, was elected to the National Academy of Sciences.

Donald R. Williams (BS '37) recalled that BS theses were required when he studied here; he did his thesis with McElvain on the synthesis of testosterone. He has just reached the 50th year of membership in the ACS.

•••

Charles C. Wilson (PhD '38 Williams) expressed appreciation about the article on Professor John Williams in BC #33.

•••

Linda S. Wilson (PhD '62, West) was named the seventh President of Radcliffe College.

•••

Hyuk Yu reports that recent PhD recipients Lixiao Wang and Mary Austin have taken postdoctoral positions; Wang is at the U. of Minnesota while Austin is at the U. of Queensland, Brisbane. Hongdoo Kim (PhD '87) spent nearly two years as a postdoctoral fellow at the National Institute of Standards and Technology with Charles C. Han (PhD '74, Yu). He has now joined the Polymeric Materials Laboratory of the Korea Institute of Science and Technology in Seoul to work with Dr. Chung Yup Kim (Postdoc '78-'80, Yu).

•••

Howard Zimmerman provided information on several of his former students and associates. Professor Hiizu Iwamura (postdoc '67-'69) is now Professor of Organic Chemistry at Tokyo U., where he holds the distinguished chair held previously by Professor Oki, his PhD advisor. Harry Morrison (postdoc '63) is chair of Chemistry at Purdue U. Mark Steinmetz (PhD '77) has been promoted to Assoc. Professor at Marquette U. and Richard Bunce (PhD '81) was promoted to Assoc. Professor at Oklahoma State U. Peter Ogilvie (BA '77) is an Assoc. Professor at the U. of New Mexico; his interest is in the photochemistry of organic molecules, an interest he developed as an undergraduate.

▼

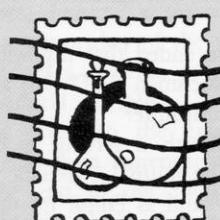
Please keep in touch and let us know what you're doing. We would also appreciate article submissions (of approximately 1,000 words) for our "Remember When" section (see pages 22-23).



Past Department Chairmen

IN THE Chairman's office there are three large oil paintings of W. W. Daniells, W. H. Mathews, and Farrington Daniels, and a framed photograph of L. L. Kahlenberg; these are the first four chairmen of the department. This seemed a good time to bring the collection of pictures of past chairmen more up to date.

Coincidentally, the next four chairmen, John D. Ferry, John E. Willard (PhD '35, Daniels), Irv Shain, and Richard F. Fenske, are all emeritus faculty members. We obtained portrait photographs of each from the University's Photo Lab and these pictures were framed and then mounted on the north wall of the chairman's office. An informal presentation was held coinciding with the start of the second semester, 1989-90 at which John Ferry and John Willard were in attendance.



BC Mailing List

We continue to have problems keeping our BC address list current. If you know of other people with Wisconsin Chemistry ties who are not receiving BC, please let us know. Also, be sure we have your current address. With each mailing, we receive yet another group of letters that was not delivered. We are disappointed to lose contact with so many people.



THE WRIGHT STUFF

JOHN WRIGHT wrote to BC from a different viewpoint to describe current group activities. The Wright research group has 12 people equally divided between the green room (where site selective laser spectroscopy is being carried out), and the blue room (where non-linear multiresonant multiwave mixing is being investigated). There have been three big news events on the research front.

Kathy Cirillo had great success in watching how defect sites in CaF₂ relax to their equilibrium distribution after being quenched from high temperature. She was able to identify all the sites from the kinetics and found that dimers and trimers were the only important clusters for the lighter rare earths. Each had acquired an extra fluoride ion to give a net negative charge. It looks like the fluorites are going to be completely understood after 17 years.

Greg Hurst succeeded in obtaining the first nonlinear line narrowing spectrum of an amorphous polymer sample;

the key is to go to very low pulse energies and watch carefully for sample damage.

Finally, Peter Chen acquired the first infrared four wave signal. This accomplishment is the key to one of the group's major future directions where infrared spectroscopy will be performed with component selectivity by using two infrared resonances in the four wave mixing.

The most dominating news of the year in the Wright group has been some funding uncertainties which left a few grey hairs. Both NSF grants came up for renewal and ran into trouble. The program officer in the Materials Research Division made noises about how difficult it would be to find funds but eventually came through. In the Physical Chemistry Division, the reviews came back with comments that the research was not directed toward physical chemistry objectives. Rejected, this proposal was resubmitted to the Analytical Chemistry Division where it got great reviews and was quickly funded. On a good note, the PRF was tapped for funds for a new project with diamond anvil cells.

FACULTY NEWS, continued from page 8

members; he ended that trip with a visit with Gary Weisman (PhD '76) at the U. of New Hampshire.

Lloyd Smith is serving as Executive Editor for the journal "Genetic Analysis Techniques" and as Editor for the British journal "Sequence." He is a member of the Program Planning Committee for the ACS Division of Analytical Chemistry and is organizing the Analytical Chemistry Symposium at the Aug. 1990 ACS meeting on the topic "Mapping and Sequencing the Human Genome: New Challenges in Analytical Chemistry." He is a member of the organizing committee and will be a plenary speaker at a DOE workshop entitled "The Relevance of Mass Spectrometry to DNA Sequence Determination: Research Needs for the Human Genome Initiative." He is on the Board of Directors of a new Madison biotechnology company, Molecular Chimerics, and a member of the Scientific Advisory Board of Fotodyne, Inc., a Milwaukee based instrument company.

In his role as chairman, **Paul Treichel** traveled to Parsippany NJ in October, 1989 to represent the Department at the annual meeting of the Council for Chemical Research. He is a member of the Council's Scientific Manpower and Resources Committee. He participated in the annual Midwest Chemistry Chairmens' meeting at O'Hare Airport. Also in October, he presented a seminar at Grinnell College, his visit there hosted by former UW students Leslie Lyons, Lee Sharpe, and Holly Harris.

In BC #33, we missed some good news from 1987-8; let us remedy that here by reporting that **Jim Weisshaar** was promoted to Associate Professor.

The highlight of the year for **Bob West** was his travel to Germany in October, 1989, to receive the Wacker Company Silicone Prize. During the ceremony, held in a castle in Bavaria, Bob gave an hour-long address in German, "Zwei Mythen aus der Organosilizium Chemie". Bob traveled to Brazil in March, 1989 to consult with chemists at the U. of Campinas who are establishing the first organosilicon research group in that country and to Kuala Lumpur, Malaysia, for the first Southeast Asian Symposium on Silicon and Tin Chemistry. In early 1990, Bob is on

leave at the Technion in Haifa, Israel, serving as Lady Davis Visiting Professor.

In addition to the foreign travel, Bob continues to do lots of traveling in the US, mostly flying himself in a light airplane. On one such trip he experienced his first in-flight emergency—a fire in a cockpit radio, requiring an immediate (and uneventful) landing in Milwaukee.

Hyuk Yu was elected Fellow of the American Physical Society. Hyuk hosted several distinguished associates in his research group last year. Professor Norio Nemoto from the Institute for Chemical Research at Kyoto U. was a Visiting Assoc. Professor in early 1989, his second visit to the UW; in 1978-80, he had been a postdoctoral student with Professor Ferry. Professor Jong-Duk Kim, from the Korea Advanced Institute for Science, Daejeon, Korea, was a visiting Associate Professor. Dr. Kenichi Ito spent 18 months here as a postdoctoral fellow before returning to Japan Synthetic Rubber Co. to head a laboratory studying polymer interfaces.

Howard Zimmerman was coorganizer of a symposium on "Molecular Aspects of Organic Photochemistry," with Professor Hiizu Iwamura (Postdoc '67-'69, Zimmerman), held at the PACIFICHEM 89 Conference in Hawaii, December, 1989. Former Wisconsin colleagues who were plenary speakers included: Patrick Mariano U. of Maryland (PhD '69), Albert Padwa, Emory U. (Postdoc '62-'63), Christopher Bender, U. of Lethbridge, Canada (Postdoc '67-'69), David I. Schuster, NYU (Postdoc '60-'61), and Harry Morrison, Purdue U. (Postdoc '63-'64). Howard also gave lectures at the Clearwater Interamerican Photochemistry Society winter conference at Washington U. and at the Michl Symposium in Austin, TX.

SERAPHIM, continued from page 9

but each has available the support of in-house programmers, a software library, a reference library, interaction via regular group meetings, a computer, and a quiet place to work. Support for the fellowship program has come from NSF, Directorate for Science and Engineering Education, and from FIPSE, the Fund for the Improvement for Post-Secondary Education

in the U.S. Department of Education.

Journal of Chemical Education: Software

THIS IS a new journal of a new kind, just entering its third year of publication. It is the result of a collaboration between the long-established *Journal of Chemical Education* and Project SERAPHIM. Its motto is, it isn't about software, it is software. *JCE: Software* was initiated by a grant from the Dreyfus Foundation to pioneer the publication of innovative, high-quality, peer-reviewed and abstracted software on a regular basis, for a body of subscribers. An issue consists of one or more programs together with those written materials that support classroom or laboratory use. At present *JCE: Software* is published in three series: for the Apple II family, for the IBM PC family, and for Macintosh. There are also Special Issues, the first of which is a laser videodisc entitled, "The Periodic Table Videodisc: Reactions of the Elements."

The People of Project SERAPHIM

PROJECT SERAPHIM is also people. In addition to John Moore, who is its director, and Betty Moore, the Project Manager, there are two people who came along from Michigan: Jon Holmes is the Technical Editor and Valerie Robinson is the Manager of Publicity and Subscriptions, both for *Journal of Chemical Education: Software*. Those hired at UW are: Jay McCormick, a senior programmer; Kelley Cory, distribution coordinator; Mike Oimoen, programmer; and several student helpers. Then two Fellows, faculty on sabbatical from other institutions, were added: Russell Batt, from Kenyon College in Gambier, Ohio, and David Bailey, from Illinois Wesleyan University in Bloomington, Illinois. (There are two additional Fellows: Richard Hiatt from Brock University in St. Catherines, Ontario is due to arrive January 1990. Alton Banks is working with SERAPHIM's co-director, J. J. Lagowski, at the University of Texas at Austin.) Steve Gammon, currently interim Laboratory Director for General Chemistry, is an honorary SERAPHIM fellow.

ON THE ROAD:

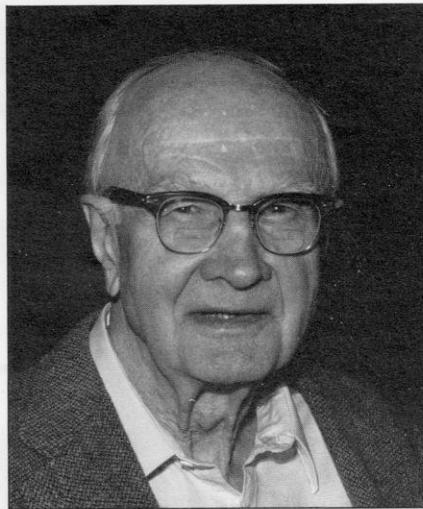
Aaron Ihde's History of the Chemistry Department

THE LONG projected *History of the UW Chemistry Department* is finally in the hands of the printer. The book is expected to be available sometime in spring, 1990.

Such a history was first discussed seriously when Chairman J. Howard Mathews retired in 1952 and Farrington Daniels became chairman. Henry Schuette, who had entered the university as a student in 1906, subsequently completed three degrees in the next decade and became a member of the faculty, was agreeable to writing such a history after he retired in 1955. However, he and Professor Daniels had started the *Badger Chemist* in 1953 and Schuette devoted a great deal of time to editing the newsletter until the mid-sixties. While he collected material for the history, he failed to finish any chapters up to the time that his health deteriorated early in the seventies.

After Richard Fenske became chairman, he persuaded Aaron Ihde to undertake the task and the department provided research funds from the McElvain bequest to have History of Science graduate student Alan Rocke assist Ihde with early archival searches.

By the time Ihde retired in 1980, seven chapters had been completed.



Aaron Ihde

While they received a favorable reading, the prospective publisher estimated that a \$20,000 subsidy would be required to publish the book. Since no such subsidy appeared available at the time, Ihde put the task aside while giving his attention to publication of other projects that had been accumulating. In 1983 an alumnus of the department volunteered to provide the necessary subsidy and writing proceeded seriously for the next several years. The resulting manuscript was considered too long and too detailed by several readers and it has subsequently undergone two condensations to reach the present version. The bulk of the excised material was general historical background as well as material dealing with the growth of the chemical profession outside the University of Wisconsin. The UW story remains virtually intact.

The book differs from most departmental histories which simply chronicle changes in department faculties. Ihde has sought to describe the growth of the

department within the university along two courses, first as a reaction to the developing personality of the institution, and second as a reaction to the growth of the chemical discipline. Particular attention is given to the emergence of graduate studies in American universities toward the end of the 1800's.

While the book focuses on the Chemistry Department in the College of Letters and Sciences, considerable material is included on chemistry being carried on elsewhere in the university, including the School of Pharmacy, the Colleges of Agriculture and Engineering, and the UW Medical School. These several units of the university have intermeshed a great deal. Faculty have frequently collaborated in research projects and many graduate students have crossed college lines in the major-minor programs.

The book focuses on a century of chemistry, corresponding to a formative period of three decades followed by the Chairmanships of W. W. Daniells (1880-1907), Louis Kahlenberg (1907-1919), and J. Howard Mathews (1919-1952). It was during the Mathews chairmanship that the department acquired national stature, although it began moving in that direction in 1895 when Kahlenberg returned from Leipzig with his doctorate.

The Daniels and Ferry chairmanships (1952-1959 and 1959-1967, respectively) are given more cursory attention in a 40 page epilogue. Faculty changes and other major trends in the last three decades are mostly summarized in several indices. The book is richly illustrated with pictures of persons, buildings, classroom scenes, and laboratories.

Copies of the book may be ordered using the form below.

Order Form

Aaron Ihde, *History of the UW Chemistry Department*

xxxx pages, \$25.00 (includes shipping & handling).

Please send _____ copies of Aaron Ihde's *History of the UW Chemistry Department* to:

Name _____

Address _____

City / State / Zip _____

Payment of _____ is enclosed. (Payment must accompany order.) Make checks payable to The Department of Chemistry, University of Wisconsin.

Mail to: Paul M. Treichel, *Badger Chemist* Editor, Department of Chemistry, University of Wisconsin, Madison, WI 53706

R ECOLLECTIONS

JAMES L. HALL

James L. Hall (PhD '39, Williams) said that the article on Jack Williams stirred up many recollections of the period 1936-1939 when he was a graduate student in Williams' research group. He wrote down some memories which he felt sure did not get into Professor Ihde's history of the department. We have reproduced his account below. (Sadly, Jim Hall passed away about two months after this was written.)

THE PERIOD 1936-1939 when I was a graduate student in Professor Williams' group was most interesting with quite a few happenings that will never make it into the official records.

"In the recent issue of the *Badger Chemist* it is mentioned that the ultracentrifuge was obtained with funds granted by the Rockefeller Foundation. Did you know that this was a 'first'? Prior to that time the Regents has refused to allow the University to accept any 'tainted' money from such industrial or foundation sources. In making his presentation to the Regents for permission to accept the grant, Professor Williams wanted some pictures of the apparatus to show. The only other such installation in the US was at the du Pont Company. Fearing the reaction of the Regents if these were seen, the pictures were all recopied at the UW and the new prints without the du Pont stamp were shown. The grant was approved, the centrifuge was installed, the precedent was set, and a major source of funds for the University came into being.

"In building the constant temperature water baths for the diffusion and electrophoresis units, we had need for about 6" plate glass windows with optically flat and parallel surfaces. We sought quotation from several suppliers and were told such windows would cost \$50 to \$500 each. It was, I believe, Owen Carter's idea to go to a local dealer in plate glass windows. We bought a large sheet of plate glass, went over it with an interferometer and were able to find numerous areas suitable for our

needs. These were cut out with a diamond cutter and we had all the windows we could use at less than \$5 each.

"At that time Jack Swanson, one of Professor Williams' students, built the first (I believe) vacuum tube glass electrode pH meter to be used at Wisconsin. This was just after publication of Dole's book 'The Glass Electrode.' I had assembled a large catalog of buffer solutions and dye indicators for pH. We calibrated these and the pH meter with a potentiometer and hydrogen electrode set-up. I continued to use these techniques for 40 years. How many present day chemists have used or even seen a glass electrode?

"Professor Williams and Daniels and their students and associates occupied the basement floor of the then 'new' addition to the chemistry building. Just above us, on the first floor, were the Departmental offices, Professor Mathew's office and his pride and joy, the crime detection laboratory. At certain times when the organic students on the top floor were all doing distillations, the outflow of their water condensers exceeded the capacity of the sewer drain in that part of the building. Consequently, at such times, the water backed up in the drains in the basement and the floor and sometimes more was flooded. Frequent and persistent appeals for relief got nowhere through the administrative process. So we all took a day to work in the shop and fashioned water-tight plugs for the toilets, floor drains, and other drains. The next time the flood started we quickly pounded these plugs into place. The water soon backed up and overflowed into the crime detection lab on the floor above. The next morning, as we came to work, there was a crew excavating at the outside corner of the building to install an adequate drain.

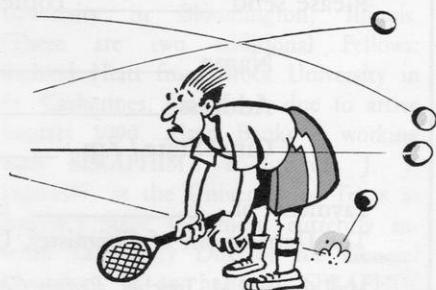
"One of the pleasant aspects of my

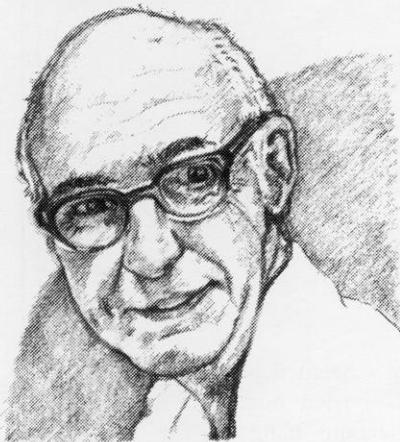


time at Wisconsin was the sharing of office space with Joe Hirschfelder during his first two years at the UW. Joe had his 'laboratory' on one side of the room—tables with the newly motorized Frieden and Monroe calculators. Professor Williams' students, Carter, de Roset and I had our study desks (kitchen tables in those days) on the opposite side. Joe was always willing to help us simplify complicated mathematics related to

our research and was an interested participant in much of the practical joking which went on. There were many interesting incidents involving Joe but I will mention only one more or less typical.

"At that time Professor Williams attracted many visitors to the laboratory, many staying from one week to a month or two. One of these was a young biochemist from New York who brought along his tennis racquet and who had considerable success playing with some of the graduate students. We told him that Joe was quite a tennis player—so with neither of them having seen the other play, the visitor challenged Joe to a match. Joe not only accepted but made a bet that his opponent would not win a single game in two sets. We made many side bets, all backing Joe. The appointed day came—Joe won in 12 straight games—the match was very long. Joe returned everything that came his way, wearing down his opponent on every point. The visitor paid off, keeping us in milkshakes and junk food for the remainder of his stay."





S IDELIGHTS ON 50 YEARS AT THE UW

C. F. CURTISS

WHEN I first arrived on the Madison campus more than fifty years ago as a freshman just out of high school, there were street car tracks running along University Avenue. Professor Louis Kahlberg, who had been the second chairman of the department, was teaching chemistry to freshman. The theater wing of the Union was under construction and noted musicians occasionally performed in the old red brick armory. Since then there have been many changes in both Madison and the University. Some have been rather minor; others have been more significant.

One of the rather minor changes, I have noticed, is the shift to considerably more casual habits of dress. When I first arrived almost all the men students and professors not only wore ties to class but usually suits. As the change gradually occurred we, professors, held out longer than the students. I finally conformed and shed the coat and, in recent years, the tie.

Our facilities for research have also improved greatly over the years. I began graduate study with Joe (Professor J. O. Hirschfelder) just after the war. At that time it took real fortitude to work late into the evening during the summer. The buildings were, of course, not air conditioned, but in addition the windows of the offices in the old chemistry building did not have screens. On a hot summer evening one had the choice of stifling in a hot office or opening the windows and fighting off bugs attracted by the lights.

After a short time we expanded into

our own small white concrete block building out on the ag campus. This building had the major advantage of screens on the windows, but, in addition, for a period of time, steel bars. The building had been built with funds from a research contract with the Navy, and some bureaucrat had decreed that the building must be "secure." Parking on the campus has become much more of a problem than it was then. At that time, I could usually park just outside my office, on the other side of the window only a few feet from my desk, and although one needed a permit, parking was free.

The fifties were a period of rapid growth on the campus, with a large influx of both undergraduate and graduate students returning after the interruption of the war. Teaching assignments (and I purposely do not use the word "load") were frequently considerably greater than they are now, but they were exciting times. Research cannot be carried out according to a "time-clock", and if the research was not going well at the moment one nevertheless felt a sense of accomplishment in the teaching, which I have always felt is a major part our "job", and a part which I have always enjoyed.

In those days our research tended to be much more spontaneous and less well planned. Professor Farrington Daniels often said that if one knew what one would be doing in research a year in advance one should not bother to do it. With the rapid increase in federal support of research in the fifties and sixties this spontaneity, of course, became less possible. With this development, I feel that something important has been lost. Research these days tends to be much "safer" and less of the "long shot" type. It should be easier to follow new leads without thinking about meeting previous commitments to proceed along a well planned path. Could Schroedinger have written a proposal describing his plans to develop wave mechanics, and if he had, would such a "long-shot" have been funded?

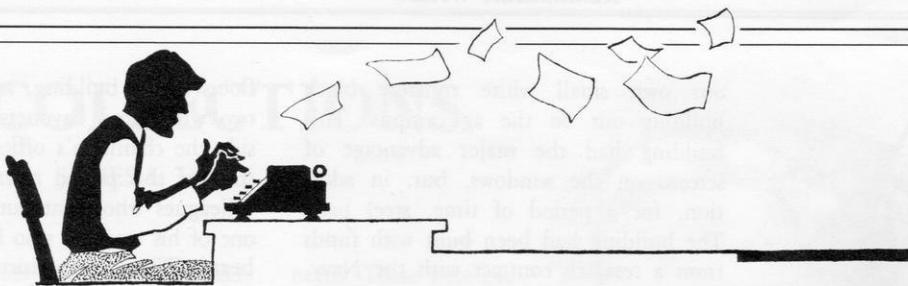
The sixties, the "Viet Nam" era, was a turbulent time. I have strong recollections of periods during which the National Guard was on campus. It is hard to believe, now, that at one time we had guardsman all over the first few

floors of the building, and in particular, two with fixed bayonets on guard outside the chairman's office. One amusing story of this period refers to one of my colleagues who went out for lunch with one of his students who had grown a full beard. When they returned the building was surrounded by a noisy group of protesting students. He told me afterwards that as they approached the building the student said to him "I will get you through the first line if you will get me through the second."

As an unfortunate legacy of this activity, I had a feeling of considerable antagonism between the students and the faculty. We represented the establishment and they were out for change. In teaching, particularly for undergraduates, the important question was "is it 'relevant'?" I felt that the students wanted to enjoy the view from the top of the mountain without first climbing it. Unfortunately, before one can understand and appreciate the significant problems at the frontiers of research one must develop an understanding of the basic concepts.

Fortunately, we have finally overcome this legacy of the Viet Nam era and the old feeling of cooperation has returned. On the other hand, I have the impression that most of the beginning graduate students are not nearly as well prepared for graduate study, particularly in background mathematics, as they were forty years ago. They also have more difficulty in using the English language with precision in both speaking and writing. Attempts to improve science education in the future must surely include major changes at the earlier levels.

AFTER years of theoretical research, I have come to believe that nature is basically simple. It is only when we are struggling with a problem that the situation appears complex; when the problem is finally solved and well understood the results are usually quite simple. Einstein is quoted as saying "The most incomprehensible thing about the world is that it is comprehensible", and the nineteenth century French mathematician, Poincare once wrote: "The scientist does not study nature because it is useful to do so. He studies it because he takes pleasure in it; and he takes pleasure in it because it is beautiful." It is unfortunate that generally only those working in the field can appreciate this beauty.



FIVE YEAR PLANS

As department chair, I have the responsibility to assess and convey a broad department perspective. Sometimes this is done formally but often it is carried out in an impromptu manner; and frequently consequential decisions or actions hang in the balance. I talk about five year plans.

The Chemistry Department is emerging from an unprecedented five year period, not likely to be duplicated in the future. During this period of time we have experienced the departure of eleven faculty colleagues (out of a total of 38) and the addition of twelve new faculty members; for a perspective, consider that there were only ten faculty changes in the previous decade. The new faculty additions have greatly broadened our research profile. We concentrated major efforts to recruit faculty with biochemical and materials science research interests, projecting that these areas will produce many of the major advances in chemistry in the future. Most important, we brought outstanding scientific talent into the department as our new colleagues.

In the last five years, we used virtually all of our uncommitted resources to hire new faculty.

Expect the next five years to be different. In contrast to many other departments, the UW Chemistry Department expects few further retirements in the next decade (only three of our current faculty will reach 70 in the next 10 years). We believe that our biggest problem in the next 10 years will be faculty retention. As the need for additional faculty in other chemistry departments becomes acute, an obvious response will be to hire established faculty from other universities. How will we prevent the loss of faculty? A general answer is that we have to make our department so professionally attractive that this possibility will not be viewed favorably.

There are many specific ways to do this, of course, but quality of the department and the program will certainly be the general theme. Which brings me to our next five year plan. In the last five years we have put all other needs of the department on hold in deference to faculty hiring. We had to! But, actions to further strengthen our department and our program are crucial if we are to meet the challenges to come. In the next five years, we will have to invest our resources in equipment and supplies, in support personnel, and in graduate student support. Equally important, we must invest in teaching our students. Our "product" is the students who receive degrees from Wisconsin. We will be judged by the success of our students in their professional careers.

We will get a big boost for our program if we get support for a new building addition. We were overcrowded eight years ago when an addition was first proposed, but our department has now even more acute needs for space. We are making a major effort during this biennium to present our case to the university and the state. We believe that the chances of obtaining funding for a building addition have never been greater. This is one reason why I have presented a feature on this subject in this issue of BC.

We were successful beyond our expectations in the last five years. I am optimistic that we will handle these future challenges at least as well.

Paul Treichel



